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the other side of it rises one of the escars which abound in the parish. The highest part of this is called the *Gallows Hill*, and the marks of three graves are shown near the spot where the gallows stood. They are said to contain the remains of three warriors slain by Brian Carrach. Living, as this chieftain did, in a district which was wrested from a rival tribe, his life was naturally marked by vigilance, and his acts by decision and severity. The inaccessible nature of his territory enabled him to bid defiance to the English, but the emissaries of the O'Cahans were ever ready to take advantage of his difficulties; and tradition says that the two sons whom he left were assassinated by the Logans and Mac Shanes at a christening party near Skeg-na-holiagh. Certainly the stories which are told of him do not impress the mind with a notion of his gentleness. The following, which was related to Dr. O'Donovan, when in this part of the country in 1834, and was communicated by him to the Ordnance Survey Office,* presents a fair specimen of the local estimate for this chief's memory:—"Many stories are related of Brian Carrach O'Neill, who encroached upon O'Kane, and possessed the south-east portion of the county. Brian would never hang one man alone, and if he found a man guilty of swinging by his law, he would give him a long day, until he could find another to dance along with him. One time he found a man guilty, and a long time passed over, but no companion could be found for him. At last a stranger came to visit the friars of a monastery within the territory, and Brian, riding out one day, viewed him, and they allow that he sent word to the abbot, requesting of him to *lend* him that man, and that he would send him one in return as soon as possible. The abbot, fearing to disobey, sent him the man, and Brian caused him to be hanged along with the convict. Soon after this, he found two others guilty, one of whom attracted his notice as being remarkably comely. Brian spoke to him, saying, 'I shall forgive you if you will marry a daughter that I have.' 'Let's see her,' says the convict. Brian sends for the daughter; but as soon as the comely youth beheld her, he cried out, Suaṙ liom, ṙuaṙ liom: 'Up with me, up with me.' 'By the powers,' says Brian, 'I will not up with you, but she must go up.' Upon which he hanged his own daughter for her ugliness, and gave the comely youth up to the abbot, in payment of the man he had borrowed from him to make up the even number."†

The monastery above mentioned was, probably, the small friary which tradition reports to have existed in the little village of Tamlaght, about two miles distant, on the north-west.

The Rev. Samuel Haughton stated his views respecting the tidal currents in the Arctic Archipelago. In his opinion the Atlantic and

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* Londonderry Letters, dated Newtownlimavady, August 16, 1834.

† A story very similar is recorded by Dr. Fitzgerald, in Mason's "Parochial Survey," of Henry Avrey O'Neill, whose castle was in the parish of Ardstraw.—Vol. i., p. 116. The Ardstraw youth said, *Cur suas me, cur suas me.*

Pacific tides meet along a line of comparatively still water, on which the ice accumulates so as to form an impassable barrier. This line passes through the following points:—North of Renslœr Harbour; North of Wellington Channel; Banks's Strait; North of Prince of Wales's Strait.

A general sketch of this theory was published, in April, 1858, in the "Natural History Review," and communicated by Mr. Haughton to Captain M'Clintock in the summer of 1857. The practical conclusion deduced from this theory was, that no ship could pass from the Atlantic to the Pacific, or *vice versâ*. Mr. Haughton stated that the discoveries of Captain M'Clintock respecting the "Erebus" and "Terror" confirmed this theory.

The Rev. Robert Carmichael read the first part of a paper—

ON CERTAIN METHODS IN THE CALCULUS OF FINITE DIFFERENCES.

Sect. I.—*On the Solution of Systems of Simultaneous Equations in the Calculus of Finite Differences.*

There are many questions in physics, more especially in the departments of magnetism, heat, meteorology, and astronomy, in which the conditions for solution are given by observations made at periods separated by finite intervals, and the unknown quantities enter in certain linear combinations. It would seem to be obvious that, in some of these cases, the phenomena would admit, as their possible analytical expression, and in some cases would require as their only suitable expression, systems of simultaneous equations in finite differences.

For instance, it seems evident that there are certain classes of physical problems which are only susceptible of exposition by such a system as,—if u_t, v_t, w_t, &c., are unknown functions of t to be determined, a_1, b_1, c_1, &c., constants, and f_1, f_2, f_3, &c., functions of known form,—

$$\left.\begin{aligned} \Delta.u_t &= a_1u_t + b_1v_t + c_1w_t + \ldots + f_1(t) \\ \Delta.v_t &= a_2u_t + b_2v_t + c_2w_t + \ldots + f_2(t) \\ \Delta.w_t &= a_3u_t + b_3v_t + c_3w_t + \ldots + f_3(t) \\ &\text{&c.} \end{aligned}\right\},$$

or,

$$\left.\begin{aligned} u_{t+n} &= a_1u_t + b_1v_t + c_1w_t + \ldots + f_1(t) \\ v_{t+n} &= a_2u_t + b_2v_t + c_2w_t + \ldots + f_2(t) \\ w_{t+n} &= a_3u_t + b_3v_t + c_3w_t + \ldots + f_3(t) \\ &\text{&c.} \end{aligned}\right\},$$

So far as I am aware, no general method has been given for the solution of such systems of equations. In the following pages an attempt is made to supply the desideratum.